



REMR MATERIAL DATA SHEET CM-PC-1.17

CONCRETE PATCHING MATERIAL: GEMCRETE

1. NAME

Gemcrete

2. MANUFACTURER

Gemite Unique Products, Inc.
Box 199, Ellicott Station
Buffalo, N.Y. 14205
Telephone: 716-835-9100

3. DESCRIPTION

A hydraulic cement-based, fiber material consisting of cement, sand, proprietary dry components and fibers.

4. USES & LIMITATIONS

Uses: Gemcrete can be used for waterproofing and concrete restoration of bridge and parking decks, vaulted sidewalks and streets, pools and concrete water tanks, and industrial floors and loading docks.

Limitations: Gemcrete must not be used when the temperature is expected to be below 40°F (4°C) within 48 hr or when rain is imminent.

5. MANUFACTURER'S TECHNICAL DATA

Modulus of rupture	1,500 to 1,900 psi
Ultimate tensile stress	500 to 700 psi
Modulus of elasticity	$2.0 \text{ to } 2.9 \times 10^6$ psi
Compressive strength	6,000 to 8,000 psi

Izod impact strength	31.5 to 45.0 in. lb/sq in.
Freeze/Thaw resistance (ASTM C 666-77, A)	0% weight loss after 300 cycles
Water vapor permeability	0.17 to 0.30 perm-in
Thermal expansion & concentration	$6 \times 10^{-6} \times ^\circ\text{F}:1$
Direct tensile bond strength	150 to 300 psi
Fire testing	Noncombustible; 0 flame; 0 smoke
Toxicity	Nontoxic in both wet and dry form
Chemical resistance	Resistant to solvents, fuels, strong alkalies and chloride salt solutions
Wet density	137 lb/cu ft

6. MANUFACTURER'S GUIDANCE FOR APPLICATION

Surface preparation: Remove all loose and delaminated concrete; clean off all grease, laitance, dirt, and efflorescence, using sandblasting, shot-blasting, scarifying, scabbing, or other approved methods. Mesh all dynamic cracks with welded wire fabric, mechanically fastened to the deck over the crack to spread the crack movement over a wider area. Thoroughly saturate the slab. Remove all standing water. Broom in Gemcrete Slurry as a primer for application of Gemcrete.

Mixture design:

	Gemcrete	Gemcrete Slurry
Concentrate	17.6 lb	13.9 lb
Portland cement	94 lb	94 lb
Mortar sand	140 lb	140 lb
Water	4.2 gal	For brushable consistency

Mixing procedure: Gemcrete concentrate consists of dry powders and a separately packaged bag of fibres. It is easily mixed onsite with a paddle or helix screw-type mortar mixer. Place mixing water in the mixer. Slowly add Gemcrete dry powders to the water and mix for one min. Add sand and cement and mix until free of lumps. Add reinforcing fibres and mix for not more than one min. Convey mixed material to point of placement in clean, uncontaminated containers. Mechanical transportation or pump may be used.

Precautions: When preparing batches, withhold a portion of the water until all other components have been included. Then add water to the mixture until the desired consistency is attained. This procedure allows for the variable moisture content of the sand.

When the thickness exceeds 3/4 in. (18 mm), or when large variations in thickness exist, contact the Manufacturer for assistance.

Application: Apply Gemcrete to a uniform specified thickness, not exceeding 3/4 in. (18 mm). Use a wood or magnesium float for compaction and finishing. In larger areas, use a magnesium bull float. Do not use a steel trowel. Ensure that fibres are distributed across any wet joint.

Curing: Moist cure the finished slab for 48 hr. Use wet burlap covered with polyethylene or other suitable methods.

Coverage: Calculated coverage of Gemcrete is 98 sq ft at 1/4-in. thickness per 1 US bag batch.

7. MISCELLANEOUS

The only components supplied by the manufacturer are the proprietary dry components and the fibers. All other materials are the responsibility of the user.

8. WARRANTY

Gemite Unique Products Inc. warrants that its products are of the quality represented in its product literature and package markings and, when applied in accordance with its current specifications and application instructions, will perform as stated in its product literature. This warranty applies only to the application of products on approved substrates. Gemite Unique Products Inc. assumes no responsibility for workmanship. Gemite Unique Products Inc. shall not be liable or responsible for any incidental, consequential, commercial or exemplary losses or damages resulting from the breach of this warranty, and the sole and exclusive remedy under this warranty shall be the replacement, or at its option, a refund of the purchase price of products found to be defective within one year of its original application.

This warranty is in lieu of all other warranties, express or implied, and whether of merchantability or fitness for a particular purpose or otherwise. This warranty may not be enlarged or extended by our sales representatives.

9. MAINTENANCE

None required.

10. TECHNICAL SERVICE

Gemite Unique Products Inc., through a network of Certified Engineers, can provide a wide range of engineering support services to the owner, architect or engineer to help define all problems within the substrate accurately and provide complete specifications with accurate cost projections.

On small projects Gemcrete may be installed by any competent concrete contractor with the standard warranty applicable.

For large parking deck or bridge projects, Gemcrete must be installed by a Certified Contractor under the supervision of a Manufacturer's representative or Certified Engineer, to qualify for a single source warranty program.

11. CORPS OF ENGINEERS' EVALUATION

This material was evaluated by Singleton Laboratories, TVA, through a support agreement with the US Army Engineer Waterways Experiment Station.*

Property	Test Method	Results
Compressive strength, psi	ASTM C 109	8,580
Slant-shear bond strength, psi	ASTM C 882	
Dry surfaces		2,740
Wet surfaces		2,240
Bond capacity in direct tension, psi	**	175
Bond capacity under flexural stress, psi	ASTM C 293	1,390
Underwater abrasion loss, %	CRD-C 63	11
Resistance to cycles of freezing and thawing,	ASTM C 666	
% of original weight after 312 cycles	Procedure A	100
Impact resistance, in.-lb	--	255
Coefficient of thermal expansion, millionths/°F	--	6.4

* Best, Floyd J., and McDonald, James E. 1990. "Spall Repair of Wet Concrete Surfaces," Technical Report REMR-CS-25, US Army Engineer Waterways Experiment Station, Vicksburg, MS.

** Causey, F. E. 1984. "Preliminary Evaluation of a Tension Test for Concrete Repairs," Report Gr-83-14, Department of the Interior, Bureau of Reclamation.

12. ENVIRONMENTAL CONSIDERATIONS

Reasonable caution should guide the preparation, repair, and cleanup phases of activities involving potentially hazardous and toxic chemical substances. Manufacturer's recommendations to protect occupational health and environmental quality should be carefully followed. Material safety data sheets should be obtained from the manufacturers of such materials. In cases where the effects of a chemical substance on occupational health

or environmental quality are unknown, chemical substances should be treated as potentially hazardous toxic materials.

13. AVAILABILITY AND COST

Availability: Gemcrete is distributed worldwide. For the name of a certified contractor or representative in your area, contact Gemite Unique Products Inc., at (416) 675-1000, Cable: Gemline.

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Cost: Supplied upon request.